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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,010	06/20/2003	STEVEN J. SEIPP	FIS920030142US1	1009

29371 7590 10/31/2007  
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EXAMINER
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STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

MAIL DATE	DELIVERY MODE
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10/31/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/604,010	<b>Applicant(s)</b> SEIPP, STEVEN J.	
	<b>Examiner</b> Gordon J. Stock	<b>Art Unit</b> 2877	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input checked="" type="checkbox"/> Other: <u>PTOL-413B</u> .            |

### DETAILED ACTION

1. The Amendment received on October 10, 2007 has been entered into the record.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-5** are rejected under 35 U.S.C. 102(b) as being anticipated by **Green (4,475,122)**.

As for **claim 1**, Green discloses a method of aligning a substrate to an exposure system (Fig. 6); comprising: disposing a patterned substrate on a stage of an exposure system having an alignment routine (Fig. 1: 31; col. 3, lines 40-50; Fig. 6); including locating a first point of interest on the patterned substrate (Fig. 6: 45); scanning a first area on the patterned substrate proximate the first point of interest for a first unique feature (Fig. 6: 45; col. 4, lines 34-54); defining a periodicity for the patterned substrate (periodic chips/dies: Fig. 34 with fixed distances between them demonstrating periodic nature: col. 6, lines 5-11); locating a second point of interest on the patterned substrate based on the periodicity (Fig. 6: 47; distance between targets known in relation to fixed distances of dies: col. 8, lines 54-65; Fig. 1: 36a, 36b); scanning a second area on the patterned substrate proximate the second point of interest for a second unique feature corresponding to the first unique feature (Fig. 6: 47; col. 4, lines 34-54); wherein the first unique feature is saved as an alignment image for use in locating the second unique feature in the second area (Figs. 15-17: images stored; col. 8, lines 8-30); gathering alignment data with

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respect to the patterned substrate from the scanning of the first area on the patterned substrate proximate the first point of interest for the first unique feature and the scanning of the second area on the patterned substrate proximate the second point of interest for the second unique feature corresponding to the first unique feature and determining substrate position relative to the exposure system from the gathered alignment data (Fig. 6: 48).

As for **claim 2**, Green discloses everything as above (see **claim 1**). In addition, he discloses using the alignment data for aligning the substrate (Fig. 6: 48 and 49).

As for **claim 3**, Green discloses everything as above (see **claim 1**). In addition, he discloses exposing the substrate with the exposure system (Fig. 6: 49).

As for **claim 4**, Green discloses everything as above (see **claim 1**). In addition, he discloses the substrate is a semiconductor wafer (Fig. 1: 30).

As for **claim 5**, Green discloses everything as above (see **claim 1**). In addition, he discloses the first and second unique features include alignment marks on the substrate (Fig. 1: 36a and 36b).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 6 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Green (4,475,122)** in view of **Utsunomiya (6,801,825)**—previously cited.

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As for **claim 6**, Green discloses everything as above (see **claim 1**). Green is silent concerning mapping first and second points of interests and corresponding unique features to determine an orientation of substrate. However, Utsunomiya in a semiconductor exposure apparatus management system teaches mapping features (Figs. 2, 3a, 3b, 3c, Fig. 12a: 1113). Therefore, it would be obvious to one skilled in the art at the time the invention was made to map the points of interests and marks of wafer to determine orientation error of the wafer in order correct for each measurement coordinate on the wafer.

As for **claim 9**, Green discloses everything as above (see **claim 1**). Green is silent concerning a path for automatic correction should the alignment routine fail to align. However, Utsunomiya in a semiconductor exposure apparatus management system teaches an automatic correction (Fig. 12b: feedback from 1119 to 1120 to B). Therefore, it would be obvious to one skilled in the art at the time the invention was made to provide automatic correction should alignment routine fail to align in order to provide iterative feedback to improve alignment accuracy.

6. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Green (4,475,122)** in view of **Wang et al. (4,327,292)**—previously cited.

As for **claim 7**, Green discloses everything as above (see **claim 1**). Green is silent concerning raster scanning around the first point of interest until the first unique feature is within a field of view. However, Wang teaches raster scanning for alignment (col. 11, lines 25-45). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to raster scan the wafer around the area of interest until the first unique feature is within a field of view in order to determine a difference between the scan signal with background and the

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scan signal of the mark itself by observing changes in the scan signal's intensity over the mark versus proximate the mark thereby differentiating between the mark of interest and the background.

7. **Claims 10 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Green (4,475,122)** in view of **Yasuda et al. (6,276,957)**.

As for **claims 10-11**, Green discloses everything as above (see **claim 1**). In addition, Green discloses a plurality of exposure fields, plurality of die (Fig. 1: 34) and inspecting and measuring at least one point of interest around each field of a plurality exposure fields (Fig. 1: 36a-36b; Fig. 6: 45-49). He is silent concerning the unique features, the targets, being in each field. However, Yasuda in an alignment method discloses that targets may either be on or near exposure fields (Figs. 13 and 14b) and therefore equivalent structures known in the art.. Therefore, because these two were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute targets in the streets neighboring dies for targets on dies.

#### ***Response to Arguments***

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- U.S. Patent 4,515,480 to Miller et al..
- U.S. Patent 4,870,288 to Abuku et al.
- U.S. Patent 5,621,813 to Brown et al.

U.S. Patent 5,696,835 to Hennessey et al.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300*

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 8:00 a.m. - 6:30 p.m.

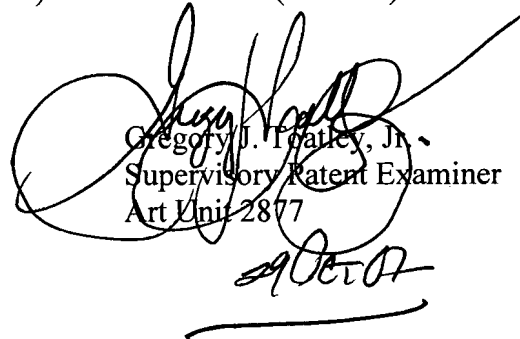
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gs

October 25, 2007



Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
Art Unit 2877  
29 OCT 07